

Amendments to the Claims:

Claims 1, 7, 16 and 23 have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) In a system including spatial data for a spatial environment, wherein a recipe is used in the spatial environment, a method for mining the spatial data to optimize the recipe for one or more target values, the method comprising:

an act of generating a data set from the spatial data using identified attributes selected by a user, the data set being varyingly complex based upon the identified attributes selected by the user;

an act of partitioning the spatial data into a training set and at least one modeling set wherein the act of partitioning is selected from the group consisting of [[:]] : selecting the training set such that the training set comprises a substantially homogenous spatial relationship to the at least one modeling set, and selecting the training set such that the training set comprises a substantially separate spatial relationship to the at least one modeling set;

an act of inspecting the generated data set to provide statistical information for the data set;

an act of preprocessing the data set to prepare the data set for modeling;

an act of modeling the preprocessed data set to describe relationships between the attributes and the one or more target values; and

an act of providing recommendations such that the recipe is optimized.

2. (Original) A method as defined in claim 1, wherein the act of preprocessing the data set further comprises:

an act of cleaning the generated data set;
an act of interpolating the generated data set;
an act of normalizing the generated data set; and
an act of generating new attributes.

3. (Original) A method as defined in claim 1, wherein the recipe is a fertilizer recipe for use in an agricultural field.

4. (Original) A method as defined in claim 1, wherein a crop yield is included in the one or more target values.

5. (Previously presented) A method as defined in claim 1, further wherein the relationships include relationships between the training set and the at least one modeling set, wherein the training set is used to optimize a recipe for the at least one modeling set.

6. (Original) A computer program product having computer executable instructions for executing the acts recited in claim 1.

7. (Currently Amended) In a system including one or more spatial databases corresponding to one or more spatial environments, a system for knowledge discovery from the one or more spatial databases, the system comprising:

a user interface; and

a spatial data modeling and analysis module (SDAM module) for extracting knowledge from the one or more spatial databases, the SDAM module comprising:

a data generation and manipulation module for loading a data set from the one or more spatial databases based on designated attributes, wherein the attributes are selected and supplied to the data generation and manipulation module by a user through the user interface;

a data inspection module for providing spatial statistics on the loaded data set;

a data preprocessing module for preparing the loaded data set for modeling,
wherein the data preprocessing module removes errors from the loaded
data set;
a data partitioning module for dividing the loaded data set into a training set and
at least one modeling set wherein the dividing is selected from the group
consisting of [[:]] :
dividing such that the training set comprises a substantially homogeneous
spatial relationship to the at least one modeling set, and
dividing such that the training set comprises a substantially separate spatial
relationship to the at least one modeling set; and
a modeling module for describing relationships between the attributes and one or
more target values, wherein the relationships are obtained from the
training set and applied to the at least one modeling set.

8. (Canceled)

9. (Canceled)

10. (Original) A system as defined in claim 7, wherein the SDAM module further
comprises an integration module for enhancing the knowledge generated from the one or more
spatial databases.

11. (Original) A system as defined in claim 7, wherein the preprocessing module
further comprises:

a cleaning and filtering module for removing duplicate data and removing noise from the
loaded data set;

a data interpolation module for computing common values for a common set of locations;

a data normalization module for transforming the loaded data set to a normal distribution
and for scaling the loaded data set to a range;

a data discretization module for use in modeling the loaded data set;
a generating new attributes module for combining existing attributes into a single attribute;
a feature selection module for reducing the attributes identified by a user such that irrelevant attributes may be removed; and
a feature extraction module for reducing a dimensionality of the loaded data set.

12. (Original) A system as defined in claim 7, further comprising a recommendation module, wherein the recommendation module optimizes a recipe for a spatial environment.

13. (Previously presented) A system as defined in claim 12, wherein the recommendation module includes at least one of: a fertilization module for optimizing a fertilizer recipe to be applied to an agricultural field; an irrigation module for optimizing a water recipe to be applied to a field; and an equipment module for optimizing a recipe to be applied to equipment.

14. (Previously presented) A system as defined in claim 13, wherein the recommendation module includes at least one of: a pesticide module, a herbicide module, and a seed-spacing module.

15. (Original) A system as defined in claim 7, wherein each of the data generation and manipulation module, the data inspection, the data preprocessing module, the data partitioning module, and the modeling module can be independently controlled by the user through the user interface.

16. (Currently Amended) In a networked computer system that includes a client and a server, wherein the server maintains spatial data sets, a method for analyzing the spatial data sets over the network, the method comprising the steps for:

applying spatial data mining functions to the spatial data sets, the spatial data sets generated using identified attributes selected by a user, wherein said spatial data mining functions comprise the steps for modeling the spatial data sets to provide estimation of predetermined parameters at predetermined points; and classifying the spatial data sets into predetermined classes; and using the estimation of the predetermined parameters to accomplish a predetermined purpose, wherein the predetermined purpose includes at least one of determining how a the predicted variable affects a predetermined target variable, providing recommendations as to how to achieve a predetermined target variable, ~~and creating new spatial data mining methods.~~

17. (Previously presented) A method as defined in claim 16, further comprising the step for combining different programming environments to allow different programming environments to function on one server.

18. (Previously presented) A method as defined in claim 17, wherein the step for combining different programming environments comprises a unified controller.

19. (Previously presented) A method as defined in claim 16, wherein the spatial data set is generated by a spatial data simulator.

20. (Previously presented) A method as defined in claim 16, wherein said spatial data mining functions further comprise the step for partitioning said data set into more homogenous

portions.

21. (Previously presented) A method as defined in claim 16, wherein said spatial data mining functions further comprise the step for integrating said modeling and classifications steps.

22. (Previously presented) A computer program product having computer executable instructions for performing the steps recited in claim 16.

23. (Currently Amended) In an environment including spatial data relating to a specific agricultural field, a method for analyzing the spatial data comprising steps for:

applying spatial data mining functions to the spatial data, the spatial data generated using identified attributes selected by a user, wherein said spatial data mining functions comprise the steps for:

modeling the spatial data to provide an estimation of predetermined parameters at predetermined points; and

classifying the spatial data into predetermined classes; and

using the estimation ~~of the spatial data analysis~~ to optimize the treatment of the agricultural field to produce a predetermined yield.

24. (Previously presented) A method as defined in claim 23, wherein said spatial data consists of past and present data of a specific agricultural field.

25. (Previously presented) A method as defined in claim 23, wherein the step for applying spatial data mining functions occurs in a network environment.
